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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,413	11/14/2001	Yoshifumi Iida	111115	7047

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EXAMINER

RODEE, CHRISTOPHER D

ART UNIT PAPER NUMBER

1756

6

DATE MAILED: 10/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/987,413

Applicant(s)

IIDA ET AL.

Examiner

Christopher D RoDee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-19 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-17, drawn to a toner, developer, and developer unit, classified in class 430, subclass 108.6.
- II. Claims 18 and 19, drawn to a method of forming a multicolor image including a transfer step, classified in class 430, subclass 45.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in another and materially different process such as writing an ionographic pattern on the surface of a dielectric material, developing the image with a the white toner, optionally repeating the writing and developing steps for other colored toners, and fixing the toner image to the dielectric receiver.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Stephen Tu on 27 September 2002 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-17.

Affirmation of this election was made by applicant in paper #5. Claims 18 and 19 are withdrawn

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from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

✓ Claims 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 16 and 17 are indefinite because it is unclear if the developer unit is a container holding the plurality of developers or an apparatus. In the latter case the claims are incomplete because they fail to recite the requisite structure (i.e., means) necessary to develop an image. An apparatus is defined by its structure and the instant claims appear to have no structure. Also note that in the event the claimed developer unit is an apparatus as appeared intended noting specification p. 30, l. 3-12), the toner or developer does not limit such an apparatus because these materials are the materials acted upon by the apparatus. The toner and developer are consumed during the development process and are not structural components of an apparatus. See MPEP 2114 & 2115.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii *et al.* in US Patent 4,855,204 in view of Komai *et al.* in US Patent 6,077,640, further in view of Demizu *et al.* in US Patent 4,943,506, still further in view of Iida *et al.* in US Patent 5,922,500.

Fujii discloses a white toner containing a fixing (binder) resin and a titanium dioxide pigment dispersed in the binder as a colorant (Abstract). The titanium oxide is mixed with the binder in an amount of from 1 to 50 parts, preferably 2 to 30 parts, per 100 parts of the fixing resin (col. 3, l. 50-53). Example 1 produces a specific toner from 20 parts of titanium dioxide, 100 parts of a styrene-acrylic resin, 2 parts of polypropylene, and 1.5 parts of a charge control agent. The produced toner had an average particle diameter of 12 microns. To the toner is added hydrophobic silica, identified by its tradename as R-972, to improve fluidity. The toner is mixed with a ferrite carrier to form a developer and has an absolute value of charge of 22.2 $\mu\text{C/g}$.

The reference does not disclose the specific surface area of the silica additives and does not suggest hydrophobic titanium oxide as the additive to the toner particles.

Komai identifies the specific surface area of R972 silica as 110 m^2/g (col. 23, l. 40-42).

Demizu discloses that silica and titanium dioxide are known alternatives for each other as fluidity additives in white toners (col. 6, l. 58-62). Like Fujii, Demizu exemplifies the hydrophobic silica R972 as an external additive for the toner (Example 1, col. 8). Demizu also discloses the average particle size of the white toner as about 13 to 14 μm (col. 6, l. 56-57) and that the amount of the white pigment in the toner is from 15 to 60 parts by weight based on 100 parts of the binder resin (col. 2, l. 17-26; Examples). Demizu mixed the white toner with a

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carrier to form a developer composition (col. 6, l. 63+). There is sufficient overlap between the composition of the white toner in Fujii and Demizu.

lida discloses hydrophobic titanium dioxide additives for toners that have improved fluidity characteristics. The titanium oxide has a specific surface area of from 100 to 350 m²/g (col. 6, l. 52-54). Binders for the toner include styrene/acrylates (col. 11, l. 10-11). Production Example 1 shows that TiO(OH)₂ is reacted with a hydrophobicizing silane in order to produce hydrophobic titanium oxide particles with a BET specific surface area of 180 m²/g. Also note Production Example 3 that forms hydrophobic titanium oxide by a similar process and has a specific surface area of 130 m²/g.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use titanium dioxide in place of silica as the additive to the toner of Fujii because Demizu teaches that silica and titanium oxide are alternatives for each other in the art as fluidizing agent. The artisan would recognize that the silica in Fujii has a BET specific surface area of 110 m²/g based on the disclosure of Komai. The combination is strengthened by lida, which specifically discloses a hydrophobic titanium dioxide having a particular BET specific surface area, as discussed above, is effective for forming a toner composition with excellent fluidity. The artisan would also find it obvious to use exemplified titanium oxides disclosed by lida in the invention of Fujii in place of the silica because lida discloses that these titanium oxides are effective fluidity agents and Demizu teaches that silicas and titanium oxides are alternatives for each other in white toners. There is ample motivation to make the combination because the artisan would expect the titanium oxides to be at least as effective for fluidity improvement. The artisan would also have been expected to optimize the charge on the toner in Fujii because Fujii teaches the importance of obtaining uniform triboelectric charge (col. 1, l. 20). It appears that this hydrophobic titanium dioxide inherently has the specific gravity of

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the instant claims because lida's titanium oxide is made by same the process disclosed in the specification (pp. 18-20). The artisan would also have been expected to optimize the amounts of the white colorant within the scope of those values taught by the primary reference as effective.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii *et al.* in US Patent 4,855,204 or Demizu *et al.* in US Patent 4,943,506, each in view of Sato *et al.* in US Patent 5,518,849.

Fujii and Demizu each discloses a white toner having the requisite binder resin and white colorant in the specified amounts as well as an average particle diameter required of the claims. Each reference also suggests and exemplifies preparation of a developer by combining the toner with a carrier (Demizu: col. 6, l. 63 - col. 7, l. 6, col. 13, l. 43-47; Fujii: col. 6, l. 20-24).

The references do not disclose a fluoro-resin coating for the carrier or the resistance of the core.

Sato discloses a ferrite carrier for use in preparation of a two-component electrophotographic developer (col. 8, l. 46-56). The core has a resistance of $2.5 \times 10^8 \Omega$ to $2.5 \times 10^9 \Omega$ and is coated with a fluoro-resin (col. 4, l. 32-46; col. 7, l. 56-59; Example 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the carrier disclosed by Sato in the invention of either Fujii or Demizu because the primary references suggest the formation of a developer that contains a carrier and Sato discloses a specific ferrite that provides high quality images. Fujii is specifically concerned with image quality such as image density, image fog, and image blurring (Abstract). Demizu is also concerned with image quality such as fog (col. 1). There is ample motivation to

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combine the references in order to obtain improved image quality using the white toner of either primary reference with the carrier of Sato.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii *et al.* in US Patent 4,855,204 or Demizu *et al.* in US Patent 4,943,506, each in view of Vail in US Patent 5,994,015.

As discussed above, Fujii and Demizu each disclose a white toner having the requisite binder resin and white colorant in the specified amounts as well as an average particle diameter required of the claims. Each reference also suggests and exemplifies preparation of a developer by combining the toner with a carrier (Demizu: col. 6, l. 63 - col. 7, l. 6, col. 13, l. 43-47; Fujii: col. 6, l. 20-24).

The references do not disclose a fluoro-resin coating for the carrier, particularly where the fluoro-resin coating contains an electrically conductive particle dispersed therein.

Vail discloses a carrier for a two-component developer that has a core **11** coated with a first conductive layer **12**. This conductive layer is comprised of fluoropolymer (col. 4, l. 10-39) and conductive particles **14**, such as carbon black (col. 4, l. 1). A second outer coating layer is deposited over the first conductive layer.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the carrier of Vail with the toner of either Fujii or Demizu in formation of a two-component developer because the primary references suggest the formation of a developer that contains a carrier and Vail discloses a carrier that provides improved image resolution, particularly solid area images, while providing the requisite charge to the toner (Vail: col. 2, l. 54-67).

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Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii *et al.* in US Patent 4,855,204 or Demizu *et al.* in US Patent 4,943,506, each in view of Shibuya *et al.* in US Patent 5,821,023.

Fujii and Demizu were discussed above and those discussions are applicable here. The references do not disclose a fluoro-resin coating for the carrier, particularly where the fluoro-resin coating contains a thermosetting resin.

Shibuya discloses a carrier for a two-component developer that produces high quality images (Abstract). The carrier has a resin-coating **20** on a carrier core **30**. The resin coating has a matrix of a fluoropolymer and particles of a thermosetting resin in the matrix (col. 12, l. 52 - col. 13, l. 23; col. 15, l. 15-18). See Example 4 for a specific carrier having each of these components.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the carrier of Shibuya with the toner of either Fujii or Demizu in formation of a two-component developer because the primary references suggest the formation of a developer that contains a carrier and Shibuya discloses a specific carrier that provides improved image quality.

Conclusion

Claims 16 and 17 are not rejected over art because the claims are so indefinite as to render examination over art impossible. As noted in the section 112, second paragraph, rejection, the developer unit appears intended to be recite an apparatus but there is no structure presented for such an apparatus. The Examiner would have to resort to conjecture as to the structure of the apparatus to evaluate the claims over the art. Given their current condition,

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claims 16 and 17 can only be rejected as indefinite at this time. See *Ex parte Lyell*, 17 USPQ2d 1548.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 703 308-2465. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703 308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.

cdr
October 18, 2002



CHRISTOPHER RODEE
PRIMARY EXAMINER